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The territory of Ladák is one of the most elevated regions of the earth. Its different valleys lie along the head-waters of the Indus, the Sutluj, and the Chenáb; and the joint effects of elevation and of isolation amidst snowy mountains produce perhaps the most singular climate in the known world. Burning heat by day is succeeded by piercing cold at night, and everything is parched by the extreme dryness of the air. The rarefied atmosphere offers but little impediment to the sun's rays, which during a short summer are sufficiently powerful to ripen barley at an elevation of 15,000 feet, although the temperature falls below the freezing point every night. This climate is equally favourable to animal life. The plains between 16,000 and 17,000 feet are covered with wild horses and hares and immense flocks of domestic goats and sheep; and the slopes of the hills up to 19,000 feet abound with marmots and Alpine hares. Such is the extreme dryness of the atmosphere, that no rain falls and but little snow, and both meats and fruits are cured by mere exposure to the air.

2.—BOUNDARIES AND EXTENT.

Ladák is the most westerly country occupied by the Tibetan race who profess the Buddhist faith. On the north it is divided by the Kárákoram mountains from the Chinese district of Kotan. To the east and south-east are the Chinese districts of Rud[illegible] and Chumurti; and to the south are the districts of Lahul and Spiti, now attached to British India, but formerly belonging to Ladák. To the west lie Kashmir and Balti, the former separated by the western Himalaya, and the

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rocky promontory juts out into the lake, the water is very deep. On the north and east sides it is shallow; but on the west, the steep slope of the mountains appears to be continued beneath the surface. The water is exceedingly brackish and bitter, and the whole of the ground on the south-eastern shore glitters with a saline matter, which forms a thick crust of some extent. The southern road passes over this vast cake of salt, which cracks and crunches beneath the feet of the traveller. The salt is natron, or sub-carbonate of soda. On all sides the mountains still retain the ancient beach-marks in distinct lines, at all heights up to about 150 feet above the present level of the lake. In the numerous deposits of fine alluvial clay, both white and yellow, we found myriads of fossil shells of the *Lymnæa auricularia*, and a few specimens of a *Cyclas*, preserved inside the Lymnæa. When these animals existed, the lake must have formed a vast sheet of fresh water with a narrow passage to the westward, which connected it with a second and larger lake, that must have covered the whole of the present plain from Kyang, from the foot of the Thung Lung Pass to the forks of the Sum Gal river, a length of about thirty-five miles. In the clay deposits of this plain, as well as in the connecting gorge, we found myriads of the same fossil shells (*Lymnæa auricularia*) before mentioned. The Tsho-kar lake abounds with many kinds of water-fowl, especially with wild geese and wild ducks. To the south of the Tsho-kar there is a small fresh-water lake of no great depth, that supplies the salt-water lake. It is a very favourite haunt of the *Kyang*, or wild horse.

The *Yunam Tsho* is a small sheet of fresh water in the

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bed of the Yunam river, which flows through it. In former times it must have been of some extent, and of considerable depth. When I saw it, in September, 1846, it was only 1,000 yards long and 500 yards broad. Moorcroft was informed "that it had been more extensive, but had been contracted by the falling into it of masses of rock." The gradual decrease in size has, however, been brought about by a very different cause; by the constant wearing away of the rocky barrier, which once dammed the river about one mile below the present end of the lake. Between these points the river has worn a channel through a mass of fine cream-coloured clay,* which once formed the bed of the Yunam lake. I found the lake of a very pale yellowish colour, which it had received from the cream-coloured clay deposits in the bed of a small stream upwards of half a mile above the lake. The extreme length must once have been about three miles, and the breadth varying from a quarter of a mile to more than a mile.

The *Hánlé-Tsho* is the largest sheet of fresh water that to my knowledge exists in Ladák. The extent of open water is not great, but the whole extent of swamp is between three and four miles in length. It is principally supplied by a rivulet called the Kongra-chu, which drains the lofty range of mountains to the westward of the Tshomoriri lake as far south as the Lának Pass. A second feeder flows from a southern range of mountains, that divide Rukchu from the Chinese district of Chumur-ti. A third small stream, which joins it from the north-west, is full of fish, which attain a size of fourteen or fifteen inches. To the east of the lake is situated the

* Moorcroft, I. p. 217, also notices this fine clay.

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VIII.—PRODUCTIONS.

I.—ANIMAL.

● /36 THE animal productions of Ladák are particularly interesting, as they comprise the wild horse, the yák, or long-haired bull, whose tail furnishes the Indian *chaori*, the shawl-wool goat, whose fine under-fleece is woven into the beautiful Kashmirian shawls, and the púrik sheep, of which some twenty specimens have been exhibited in the Zoological Gardens of London.

WILD ANIMALS.

The wild animals of Ladák are both numerous and interesting. "The high hills are a refuge for the wild goats, and the rocks for the conies."* The elevated plains of the Indus and the lofty table-lands of Ṛukchu abound with the wild horse, the marmot, and the hare: while the snowy mountains and rugged glens teem with many varieties of the wild goat, sheep, and deer, some of which are most probably still unknown.

The *Kyang*,† which has been called a horse by some, and an ass by others, is the *Equus hemionus* of Pallas, and the *Equus Kyang* of Moorcroft. The animal when

* Psalm civ. 18.

† The male is called simply *r-Kyang*, and the female *Mo-r-Kyang*. See Plate VI. for four views of the Kyang's skull.

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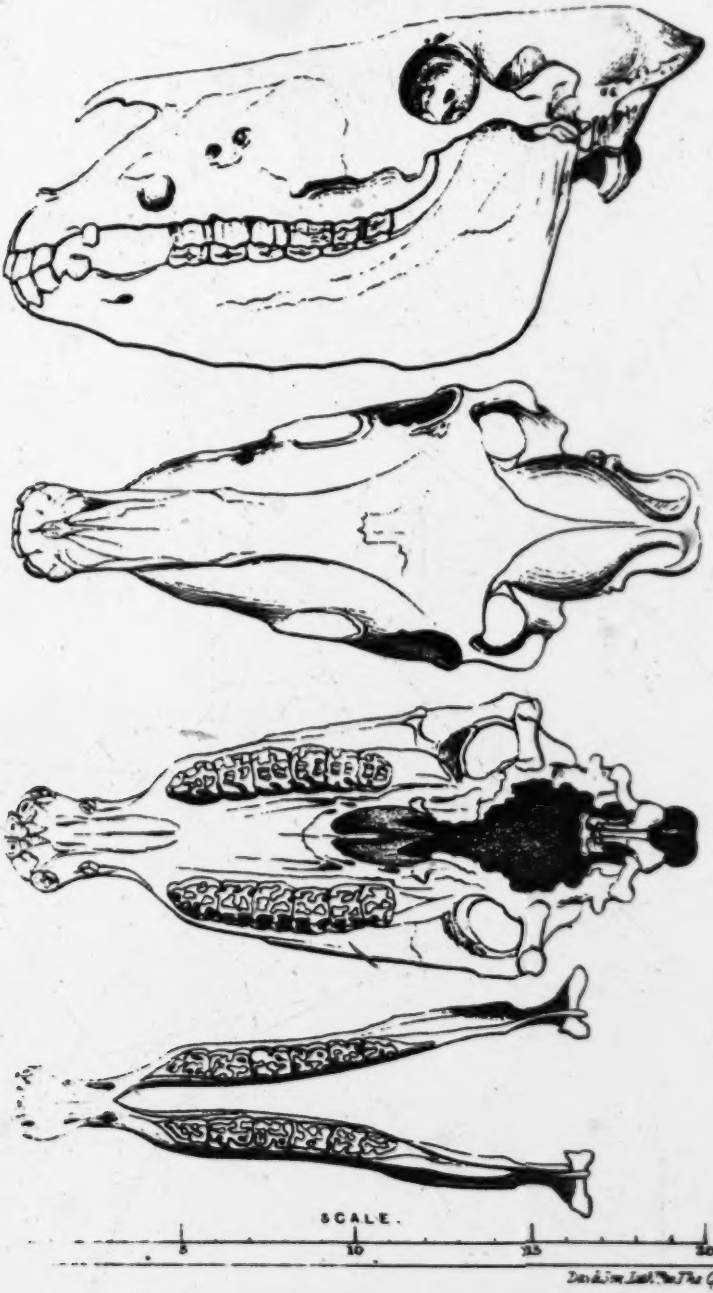
The KYANG, or Wild Horse. Equus Kyang.



1: Cunningham G-3 (1846-47) 1854 AJ4 W. Tibetans AJ4

136 full grown is about fourteen hands high: the facial line is highly arched, like that of the zebra and quagga, and the ears (like theirs) are longer than those of a horse, but much shorter than those of an ass. A line of black hair extends along the whole of the back, but there are no cross stripes across the withers as in the ass. The tail has a long tuft of hair at the end like the zebra. The general colour is reddish-brown on the back and sides, and white on the stomach. Moorcroft* remarks, that it is certainly not the *gorkhar*, or wild ass of Sindh, and I can vouch that it is quite different from the gorkhar of the Bikanar and Baháwalpur desert. Trebeck,† who saw herds of them on his trip to Chibra, to the south-east of Lé, states his opinion of the Kyang's shape as follows. "The form, from the fore to the hind leg and feet, to a level with the back, is more square than that of an ass, his back is less straight, and there is a dip behind the withers and rounding of the crupper, which is more like the shape of the horse. His neck is also more erect and arched than that of the ass." The following are the dimensions of a skull in my possession.

	Ft.	In.
Greatest length	1	9½
„ depth	0	10
„ breadth	0	8½

	lb.	oz.
Weight of upper jaw	5	0½
„ lower jaw	3	15½
Weight of skull	9	0

Lastly, the Kyang *neighs* like a horse, which in my judgment is conclusive that he does not belong to the

* Travels, I. p. 311. † In Moorcroft's Travels, I. p. 443.

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genus *Asinus*, but is very nearly allied to the *Equus caballus*. If the Kyang is a different genus from the *Equus hemionus* of Pallas, he should be called *Equus Tibetanus*. A living specimen of the animal has been sent to England by the Hon. Mr. Thomason, the Governor of Agra, but as the naturalists of Europe have not, I believe, yet had an opportunity of examining the skeleton, I have given several careful drawings of the skull of a Kyang, which I shot in 1846, at an elevation of 17,000 feet, on the summit of the *Nakpo Gonding* Pass, to the north of the *Chomoriri* Lake. This skull has forty teeth; and there is now no trace of any premolar teeth in the upper jaw, such as have been found in other specimens, and which led Mr. Hodgson to give the Kyang the new name of *Equus polyodon*,* or rather *Asinus polyodon*. 136

The wild yák, called *Brong* or *Dong*,† is said to inhabit the grassy plains on the upper courses of the Sutluj and Sangpo. The people generally believe in their existence, but I could neither procure any of their horns, nor find any person who had actually seen the living animal. Vigne‡ was informed that the wild yák was to be found "on the northern slopes of the Himálaya that descend upon the plains of Yarkand." Mr. Blyth§ quotes Wood to the same effect. My brother‖ also mentions that wild yáks are to be found "to the north and east of Garo," that is, in the district of Gnári. As the tame yák has been domesticated from time

* Journal As. Soc. Bengal, XVI. p. 354. Note by Blyth.

† *hBrong*. The female is called *hBrong-hBri*, which is commonly pronounced *Dong-di*.

‡ Vigne's Travels in Kashmir, Ladák, II. p. 277.

§ Journal As. Soc. Bengal, XI. p. 282, note.

‖ Ditto ditto, XII. p. 222.

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136 immemorial, the existence of wild herds in the same country may perhaps be doubted; but the general prevalence of the belief is worthy of being recorded.

[782] The largest of the wild sheep is the *Nyan* or *Ovis Ammon* of naturalists. It is found only in the most inaccessible places, near the snow-limit. Specimens of the horns may generally be seen along with those of the ibex and shá (*Ovis montana*) on the religious piles of stones called *Maná*, where they are placed by the shepherds as votive offerings. The *Nyan* of the Tibetans is closely allied to the Kachkar of Badakshán and Chitrál. Mr. Blyth has, however, distinguished them by separate names, calling the latter *Ovis Polii*, after Marco Polo, who gave the first description of the animal.

Another species of wild sheep is the *Ná*. Vigne* calls it *Snáa*, and describes it as of "the size of an ordinary sheep; of a dull brownish-gray colour, with curved, smooth, and four-sided horns." Csomo de Körös calls it a "large sheep-like deer." It is apparently the same as the *Náhur* of Nepal, and the *Ovis Náhur* of Hodgson and Blyth.†

A third species of wild sheep is the *Shá*,‡ which I have seen browsing in large flocks on the mountains, on the left bank of the Indus below Lé. The animal is as large as a stag, with strong wiry hair of a reddish-brown colour on the back, gradually changing to white on the stomach. The chest is covered with a long fringe of

* Travels, II. p. 280. The name is written *rNa*, in Tibetan. See also Csomo de Körös, Dict. in voce.

† Journal As. Soc. Bengal, XVI. p. 360.

‡ *Shá-ba*, and the female *Shá-mo*. Csomo de Körös calls the *Shá*, a stag (Dict. in voce); but the real stag is called *Shu*. The horns of the *Shá* are shown in Plate VIII.

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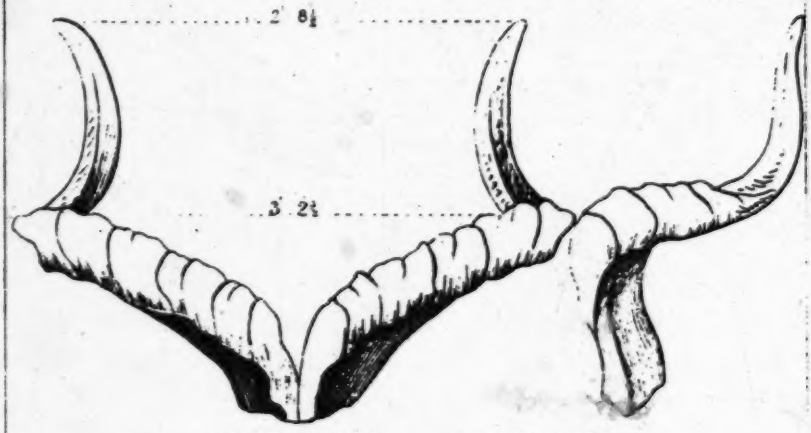
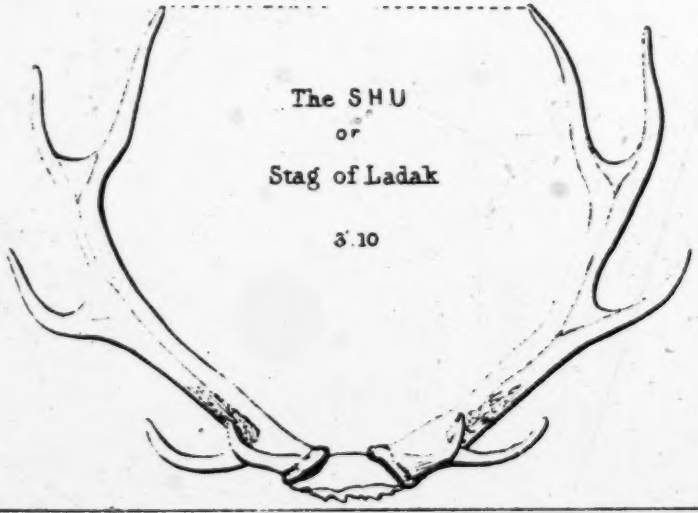
HORNS.

The SHA of Ladak, a Wild Sheep.

The RAPHO-CHHE (Markhor) or Large Wild Goa





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136 dirty black hair. The massive horns, which touch at their bases, are curved backward and downward, the tips being turned forward, upward, and inward. Each horn thus forms about three-quarters of a circle. The *Shá* is the *Ovis montana* of naturalists. The horns of a specimen, which I obtained on the banks of the Indus, below Lé, have the following measurements.

	Ft.	In.
Length of horn	2	4½
Base of horn, greatest depth	0	3¾
" " breadth	0	3
Extreme interval	1	8
Interval between tips	1	0½
Greatest circumference	0	10½
Weight ... 12 lbs.		

The age of this specimen was nearly seven years, the *rugæ* of the third year being the boldest and most deeply marked.

The wild goat called *Rápho-chhé*,* or the "great goat," is the *Már-khor*, or "snake-eater" of the Musalmáns. It is common in Balti, and in Badakshán and Chitrál; but I was unable to procure any specimen of its horns in Ladák. A pair obtained by Colonel Bates in Balti is represented in Plate VII. These horns meet at the base, rise straight upward, then turn backward and again upward. The following are the measurements:—

	Ft.	In.
Length of horn	3	9
Circumference of base	0	11
Breadth of widest face	0	4
Perpendicular rise	2	3½
Extreme width	3	2½
Width from tip to tip	2	8½

* *Rá-pho-chhé*, or simply *Rá-chhe*; the female *Rá-mo-chhe*. Mr. Vigne says that *Raica* means a horn, and *chagho*, great; but *rárácho* is simply a "horn," and not a "great horn." See Plate VII. for a pair

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136 No specimen of this magnificent goat has, I believe, yet been obtained by any naturalist, nor have I heard of any traveller who has seen the animal. I would suggest that it might be called *Capra megaceros*.

236 [136] Another species of wild goat is the Tibetan ibex, or *Skyin*.* Mr. Vigne procured a pair of horns that were four feet three inches in length. In his opinion the Skyin "is larger than the European ibex, and the horns are longer, more curved, and more tapering." The Skyin frequents the most inaccessible rocks, and the animal, when shot, is frequently much mutilated by its headlong plunge down some precipitous cliff. Vigne states that between one and two hundred of them are killed in Balti during the winter, when they are forced to descend into [224] the valleys.† In Ladák they are also snared at night, and shot in the grey dawn of the morning, when they venture down to the streams to drink. They are killed for the sake of the soft under-fleece, which, in Kashmir, [434] is called *Asali Tus*.‡ This is an exceedingly fine and soft wool of a light brown colour, which is exported to Kashmir, where it is used as a lining for shawls, woollen stockings, and gloves. It is also woven into a very fine cloth, called *Tusi*, of a soft and delicate texture, which is much prized for its warmth. The high price of the Tus is caused by the difficulty of procuring the animal, and by the uselessness of the hair. The person who separates the hair from the wool of the domestic shawl-

* *Skyin*; the female is called *Don-mo*. In Kullu and Spiti, the Skyin is called Kyin; and Spiti is called Piti, but the spelling in Tibetan always preserves the initial *s*.

† Vigne's Travels, II. p. 279.

‡ اصلي توس means simply "genuine *Tus*," or the wool of the *wild* goat; *Tus* means "n ture."

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goat is paid by the hair itself, which is manufactured into coarse blanketing for tents, and twisted into ropes. But the hair of the wild goat is short, wiry, and coarse, and the cost for picking is charged to the price of the Tus, or fine wool. Moorcroft says that neither the domesticated shawl-goat, nor the Vigogna,* furnishes a wool so full and rich to the feel, nor has so fine a material ever yet graced a British loom.

The frequent occurrence of ibex-horns on the temples of Kanáwar, Láhul, and Chamba has often suggested to me the idea that a similar religious feeling amongst the Greeks may have prompted the dedication of real ox-skulls, perhaps of animals that were slain in sacrifice, in the ancient Hellenic temples. In process of time, when the rude posts became Doric pillars, and the rough ends of the sloping beams were carved into triglyphs, the real ox-skulls were supplanted by their sculptured representations, which afterwards adorned the metopes of the Doric frieze. At least it seems difficult to account for their frequent representation on any other supposition.

The *Shu* or Tibetan stag has been described by Mr. Hodgson† from a specimen obtained near Phári, in Tsáng, the central province of Tibet. A second specimen was procured from the district of Chúmbi, to the south of Phári, where the country is more wooded and less arid than most other districts of Tibet. In 1839 I procured a most magnificent pair of stag's horns from the upper glens of the Lidar valley, in Kashmir; and in 1847 I obtained a second but smaller pair from the same valley.‡ The former pair had six snags on each horn, and was

* Transactions Roy. As. Soc. I. p. 53.

† Journal As. Soc. Bengal, XIX. p. 466; and XIX. p. 518.

‡ See Plate VIII.

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• 136 therefore a genuine *Barah-singha* (twelve-horned). The latter specimen agrees in all respects, save that of size, with those described by Mr. Hodgson. One of his specimens was procured from the most southern part of Tibet, where the climate is less rigorous and the country more wooded. My specimens were obtained in the upper course of the Lidar river, in the eastern end of Kashmir towards Ladák, where the climate may be called half-Tibetan from its dryness. The horns of my Kashmirian specimen are represented in Plate VII. Their dimensions are the following, which I have placed beside those of Mr. Hodgson's Tibetan specimen.

	Kashmirian.		Tibetan.	
	Ft.	In.	Ft.	In.
Length of horn	3	4½ ...	3	10½
Girth above burr	0	7½ ...	0	7½
Chord of arc, or bend of horn	0	10 ...	1	0½
Basal interval between horns	0	8½ ...	0	4½
Interval between extreme snags	3	5 ...	3	9
„ „ „ tips	2	0 ...	2	6½

The Musk deer, called Lá,* is found both in Tibet and in Kashmir, but I had no opportunity of procuring any specimens. Vigne mentions the Kashmirian Lá, and states that Dr. Falconer thought it was a new species.

Other wild animals of Tibet are the leopard, the bear, the wolf, the fox, and the dog. The leopard, wolf, and fox, are described by Mr. Hodgson, and noticed by Vigne.† Moorcroft ‡ adds the ounce and the lynx. The

* *gLá-ba*, or simply *gLá*; and the female *gLá-mo*.

† Journal As. Soc. Bengal, XI. p. 275, and Vigne's Travels, II. p. 281. The leopard is called *Zig* (*-gZig*); the bear, *Dom*; the dog, *Khyi*; and the fox, *Mikpa* (*dMig-pa*); from *dMig*, a hole; it is also called *dByi*.

‡ Travels, I. p. 312.

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dog is mentioned by Mr. Hodgson only, who describes it as a rare animal of a pale wolf-like colour.

The hare, called *Ri-bong*, is abundant amongst the rocks on the grassy plains of Rukchu. It is called Ri-bong, or the "hill-ass," on account of the length of its ears.* The Botis do not eat hares, as they consider the animal as a species of donkey. In 1846 I shot five in half an hour in one of the glens to the eastward of the plain of Kyung. They sit behind the rocks, with their long ears pricked, and half their heads just raised above the stone. When roused they run from rock to rock, reminding one of the words of the Psalmist, "The rocks are a refuge for the conies." The Ri-bong is as large as an English hare, has longer ears, and is of a bluish-grey or slate-colour. It is the *Lepus pallipes* or "white-foot" of Mr. Hodgson, who gives the following dimensions of his specimen.†

	Ft.	In.
Length from head to tail	0	11
„ of tail	0	4
„ of head	0	4¼
„ of ear	0	4¼

Mr. Hodgson describes a second species of Tibetan hare under the name of *Lepus oïostolus*, and he refers to Moorcroft as his principal authority for this variety.‡ But on a reference to Moorcroft (I. 225), I find that the hares shot by Trebeck and himself on the plain of Rukchu, were of a "bluish-white colour, and not much larger than English rabbits." Both in 1846 and in 1847 I shot these bluish-coloured hares on the plains of

* Ri-bong, and also Phyi-pa. *Ri-bong* means the "hill-ass." The Hindus also liken the ass to a hare, by naming the wild ass *Ghor-khar*, or the "horse-hare."

† Journal As. Soc. Bengal, XI. p. 288.

‡ Ditto ditto, XI. p. 288.

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136 Rukchu, and I feel satisfied that they are the same as the *Lepus pallipes* of Mr. Hodgson; and the more so, as several that I shot were fully as large as any English hare. Moorcroft evidently saw only one species, as he refers to the Rukchu hares a second time.*

The smaller species of hare, or *Lagonys*, is extremely common all over Tibet. It is the *Lepus alpinus* of Pallas. I have shot them near the summit of the LAnak Pass, 18,750 feet above the sea, and on the very crest of the Pir Panjál Pass at 12,000 feet. The table-lands of Rukchu, and the plains along the Yunam River, are literally honey-combed with their burrows. The Tibetan *Lagonys* is named *Shippi*, or the "whisperer," and is thus closely allied to the "calling hare" of America.

The marmot of Tibet, according to Mr. Hodgson,† is of two distinct species, the large and the small, which he has distinguished by the names of *Arctomys Tibetensis*, and *Arctomys hemachalanus*. The former obtains a length of two feet, with a tail of six inches. The latter does not reach more than thirteen inches in length. I have seen only the larger animal, which is common on the sandy plains of Rukchu. Moorcroft‡ mentions that he obtained the skin of the squirrel in Ladák; by which I believe that he meant the Arctomys.

Of the *Mustelidæ*, or weasel tribe, I am acquainted with only one species,—the *Mustela*, or true weasel. I saw one specimen of it in 1846 near the Polokonka Pass, at an elevation of 16,000 feet; and in 1847 I shot one close to the crest of the Lánák Pass, 18,700 feet. The

* Travels, I. p. 312.
† Journal As. Soc. Bengal, XII. p. 409.
‡ Travels, I. p. 312.

1: Cunningham G-3 (1846-47) 1854 AJ4 W. Tibetans AJ4

skin and skull were preserved by Dr. Thomson, in whose collection they have been carried to England. The length of body was about seven or eight inches, the legs short, and the nose long, and the whole of a light sandy colour. 136

Mr. Hodgson* has described a second species of *Mustelidæ*, in the Tibetan polecat, and he refers to a third in the Tibetan badger.

BIRDS.

The larger birds of Ladák are not many, and few of them, I believe, are peculiar to the country. The gigantic *Chakor*, or snow-pheasant, is found in Láhul and Spiti, and also in Kanâwar, but only near the snow. The common Chákor, *Rekpa*,† is abundant throughout the cultivated part of the country. Moorcroft invariably identifies the Chákor with the Francolin, or Greek partridge. According to Griffith,‡ Perdrix *Francolinus* is the black partridge of India, and Swainson§ calls it the Francolin *Chætopus*, and associates it with the grey partridge of India (Chæt. Pondicerianus).

The eagle (*Cha-nak*,‖ or the "black bird") and the kite (*Chákor*, or the "white bird") are common enough, and so is the large raven. Smaller birds also are numerous, but I had no opportunity of procuring specimens. On the western side of the Lánák Pass, about 16,500 feet, I saw a hoopoe.

* Journal As. Soc. Bengal, XVIII. p. 448.

† *sRog-pa*, pronounced *Rekpa*.

‡ MS. note by Griffith in his copy of Swainson's Birds.

§ Swainson's Birds, II. p. 344.

‖ *Bya*, generally pronounced *Cha*, is simply a bird. *Bya-nag*, is the "black bird;" and *Bya-dKar*, means the "white bird."

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136 The water-fowl, *Chhu-cha*,* swarm on the lakes and on the still waters of the Upper Indus. I have shot the wild goose, *Nang-gyod*, on the Thogji Chenmo and Chomoriri lakes, at 15,000 feet, and Colonel Bates and I shot three teal on the Suraj Dal, or small lake at the head of the Bhága River, at an elevation of upwards of 16,000 feet. I have shot both ducks and teal on the banks of the Indus below Hanlé, and in the swamps of Chachot just above Lé.

REPTILES.

The only reptile that I saw in Ladák was a single species of lizard, from four to seven inches in length. I noticed them on the lofty table-land between Gurkhyam and Hanlé, at an elevation of 15,000 feet. I captured one lizard as a specimen, but it managed to make its escape before I reached Hanlé.

FISH.

"Fish† abound in all the streams; but the chariness of life which is taught by the religion of Buddha, prevents their being caught." We procured fish from fourteen to fifteen inches in length in the stream at Hanlé, at an elevation of 15,000 feet, and again in the Puga rivulet at the same height. They were a kind of trout. Opposite the villages of Múd and Nyimo I observed fish jumping in the Indus. Vigne‡ mentions that the fish in the Indus at Skardo were all of one species of Himálayan trout, the largest weighing between two and three pounds.

* *Chhu-bya*, the "water-bird."

† Moorcroft's Travels, I. p. 313. Fish are called *Nya*.

‡ Travels, II. p. 282.

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MOLLUSCA.

136 172 The only existing mollusk I observed in Ladák was the *Lymnæa auricularia*. In Plate IX. I have given three specimens, from Pitak and Nubra in Ladák, and from Skardo in Balti. Beside them I have placed for comparison a specimen of the same mollusk from Kashmir; and above them two extinct specimens from the old lacustrine formations on the banks of the *Thogji Chenmo* and *Pangong* salt lakes. The superior size of the Kashmir specimen is perhaps no more than might be expected from the greater mildness of the climate; but that of the extinct species is most remarkable. The largest existing specimen from Pitak measures only six-eighths of an inch in length, and rather less than five-eighths in breadth; whereas the extinct specimens are upwards of an inch in length, and more than three-quarters of an inch in breadth.

These fresh-water fossil shells are found in a fine yellow sandy clay, many feet above the present level of the salt-water lakes. When they existed, the lake of Thogji Chenmo must have been a noble sheet of fresh water, upwards of forty miles in length by about twenty miles in extreme breadth, covering the whole plain of Kyung, from the foot of the Thung-Lung Pass to the rocky glen of the Sumgyel (triple junction) River. These fossil shells are now lying in myriads in the narrow pass between the old bed of the Thogji Lake and the plain of Kyung, and they are equally numerous in the upper part of the plain of Kyung.

133 132 172 At what period these vast plains were covered with water will be an interesting subject of inquiry for the geologist; but the mind gets bewildered in trying

.: Cunningham G-3 (1846-47) 1854 AJ4 W. Tibetans AJ4

135 river, near the Taskyum bridge,* and on the left branch of the Shigar river, in Balti.

185 316 173 *Gold* is found by washing the sands of the Indus and of the Shayok river; but the washings are entirely carried on by Mussulmans from Balti, as the Buddhists of Ladák have long been prohibited from the search. The prohibition is said to have originated in the fears of the Gyalpo lest the people should neglect their fields in the tempting pursuit of gold. The crowds that have flocked to the recent "diggings" in California and Australia have fully justified the fears of the Gyalpo. [776] [784] Gold is also found in Chang-thang, but its collection is prevented by a superstitious belief that the lumps of native gold "belong to the genii of the spot, who would severely punish the human appropriation of their treasures."† The sands of the Indus have long been celebrated for the production of gold. Pliny‡ says, "*Fertilissimi sunt auri Dardæ;*" and this is the case even at the present day; for the sands of the Indus, in the Dardu country, are said to be more prolific than those of any other part of the river. 136 But the gold of the Indus was known at a still earlier date; for Megasthenes relates that the Indian ants dug gold out of the earth, not for the sake of metal, but in making burrows for themselves.§ These Indian ants are no doubt the

* Travels, II. p. 392, and map. † Moorcroft, I. p. 314.

‡ Lib. VI. c. 19. The conclusion of the passage is curious and suggestive, *Setæ vero argenti*, that is, "the country of the Dardæ produced most gold, but that of the *Setæ* the most silver." As we know that silver is not found in India, the *Setæ* can be no other than the *Seths*, or "bankers," in whose hands the wealth of India has been for ages. It seems probable that many of the Indian nations, enumerated by ancient authors, may have been only different trades and professions.

§ Arrian, Indica, XV.

1: Cunningham G-3 (1846-47) 1854 AJ4 W. Tibetans AJ4

marmots (*Arctomys*) and rat-hares (*Lagonys*) of Tibet, which in making burrows "throw up the earth wherein the ore is contained, from which the Indians extract gold." On the plains along the banks of the Indus and Shayok, the marmots still throw up the earth mixed with gold-dust, from which the Indians of Balti occasionally extract a few grains of gold. Megasthenes confesses that he had not seen the animals themselves, but only their skins, which had been brought by the Macedonian soldiers into Alexander's camp. The skin of the marmot is the commonest of all the furs now brought to India.* Its Tibetan name is *Phyi-pa* or *Chipa* (or *Chupa*), which was probably confounded by Alexander's soldiers with the Indian *Chúntá*, the name of the large ant; or *Phyi-pa* may have been confounded by the Indians themselves with *Pippilaka*, the Sanscrit and Bengali name of the large ant.†

The same story of the ants as big as foxes is told by Herodotus; and Professor H. H. Wilson‡ has aptly illustrated it by a passage from the Mahábhárata, which relates that "the people who dwell under the pleasant shade of the *Kichaka-venus* (a kind of willow) and along the Sailodá river, between the Meru and Mandara mountains, the Khasas, Prádaras, Páradas, Ekásanas, Arkas, Kulindas, Tanganas, and Paratanganas, brought to Yudhishthira lumps of gold, a *drona* (64 lb.) in weight, of the sort called *paippílika*, "or ant gold," which was so called because it was exfodiated by the

* The same holds good to the eastward, for Mr. Hodgson says, "In the extensive peltry trade carried on between Nepál and Tibet, no skin is more commonly met with than that of the marmot."—Journal As. Soc. Bengal, X. p. 777.

† *Phyi-pa*, commonly pronounced *Chi-pa*.

‡ Journal Roy. As. Soc. VII. p. 143.

1: Cunningham G-3 (1846-47) 1854 AJ4 W. Tibetans AJ4

pippílaka, or common large ant." This belief, however erroneous, as the learned professor observes, was neither extravagant nor irrational. A yet earlier mention of the gold of Alpine India is that of Ctesias; but he distinctly states that it was not obtained by washing, as in the river Pactolus.* Gold is called *Ser*, gold-dust *Ser-dul*, and the gold-washer *Ser-pa*. This name I believe to have been the origin of the classical *Seres*. In Tibetan *Serki-yul* means the "gold country;" and as the affix *yul* can be omitted at pleasure, the names of Serki and Serika are almost identical.†

Copper.—According to Moorcroft, "some copper-mines are said to have been discovered towards Kashmir."‡ This statement is probably correct, as Jacquemont found copper ore in the Lidar valley, on the south-west side of the range which divides Kashmir from the Ladáki district of Suru. If any trust can be put in a name, I should suppose that copper (*zangs*) had been found in *Zangskar*, but I could not learn that it had been discovered there.

Lead and *Iron* are, according to Moorcroft, found in pits in the mountain districts remote from Lé.

Plumbago is found in Balti; but the specimens which I procured are of an inferior description. They are gritty, and will not mark paper without scratching; but as they were most probably taken from the long-exposed surface, good black lead may still perhaps be found in the same place.

Sulphur, called *Muzi*, is obtained only at Puga, in

* Fragments of Ctesias by Lion. Indica, XII. Ἔστι δὲ καὶ χρυσὸς ἐν τῇ Ἰνδικῇ χώρᾳ, οὐκ ἐν τοῖς ποταμοῖς εὑρισκόμενος καὶ πλυνόμενος, ὥσπερ ἐν τῷ Πακτωλῷ ποταμῷ.

† *gSer*, gold; *gSer-rDul*, gold dust. ‡ Travels, I. p. 313.

[34]

583 DOWER--rinto or zho or in the case of Mahomedans "mehr." The sum of money paid by the bridegroom to the father or other nearest male relative of the bride. The goods given to a woman on her marriage, including what we should call her "trousseau," and "dot" is called "raktak".

534 DRUM--denjang the big drum--body of wood and played upon like our big drums; dolti a brass drum like a kettle drum; daman a kettle drum; daps a drum played with the hands like a tambourine; daroo a very peculiar little drum used by lámas when dancing. It is shaped like an hour-glass and held in the centre, short strings with small pieces of wood attached to their ends are fastened on at either end; and when the hand is shaken these pieces of wood come in contact with the parchment heads of the drum, and thus sound it. There being several strings at each end, the sound produced is rather that of a rattle than of a drum. Denjang (or dolti, etc.,) rdung ches to play the drum.

[292]

278 DRUNKARD--rárospa or ráros or rároskhan. The Ladákis can not be called drunkards. They all drink chhang very freely, and frequently get very cheery in consequence, but even in their cups they are usually good tempered and harmless. They seldom get dead drunk. The expression zeekopkop chha ches signifies to be fuddled, or partially intoxicated.

439 [35]DYE--tshos the durable dyes of the country, rang the bright,
386 but not fast, dyes imported from India.

●136 EAGLE--lák. The Chinese or Lhasa pug dogs are called "lák khee"
825 because it is believed that if a human being lays hands upon a young eagle, when freshly hatched, the bird is transformed into a dog of the Chinese pug breed.

291 EAR FLAP--hnaslan or noslan. The woollen lappets worn by Ladáki women over their ears. In shape and size they resemble the blinkers worn by a carriage horse. They are edged with fur and are plaited into the hair.

731 EARTHQUAKE--samgul. Ladákis think that the earth is supported,
823 in the midst of an ocean, on the back of a large fish, and that whenever this fish rolls about, earthquakes are felt. In LADAK THEY ARE ALMOST UNKNOWN.

4[i.e, BARLEY BEER -- ANALYST]

231 not satisfied with that, even though these enormous dogs are able to do battle with any wolf. Thus the care for the protection of the herd rests solely upon the herder, whose only weapons are stick and slingshot. It was not to be a long time before Namgyal was to get an [136] impression of the activity of the wolves. One day, when he had lain down for a little while around noon time with his companion, just below an overhanging rock which supplied a protection against the scorching rays of the sun--most of the small animals of the herd had done the same and were resting here and there in the shadow of boulders, chewing the cud--suddenly just as if lightning had struck the herd, two wolves had, without being noticed, crept up between the mass of boulders, had seized a sheep and a goat and with their prey in their mouths they were making off. The two youthful herders jumped up, stoutly remained on their post, shouted after the robbers and threw large stones after them which, however, did not prevent the latter in the least from securing their prey.

[136] Another time an imperial eagle struck a small kid scarcely twenty paces away from Namgyal and carried it through the air away to its nest which was located high up in the ravine, out in the open, on a narrow projection of a perpendicular slate wall. From an adjoining rock the boys had been able to see into the nest in which a single young eagle was lying.

/37/ When in the evening Namgyal with a wildly beating heart told his father about the wolf's raid of the herd, the father did not say much and only admonished him to keep a good lookout; he knew only too well how rarely even a courageous herder succeeds in keeping the wolf away from the herd or in chasing it so that it must let go of the prey it once seized. He remembered that during such an attempt a wolf had once attacked him and had bitten his elbow, which he had held out against it, so viciously that even now he still felt frequent pains in his joint. On this occasion Lobsang Wanggyal [136] told his son how once yonder in Tagmachig during the winter a snow leopard (irbis or ounce, felis uncia) broke into a sheep stall and in one night strangled 26 sheep and goats. The robber hardly ate anything of the flesh of the animals; in the morning the startled farmer found the snow leopard still in the stall. It had been unable to get out because it could not open the door which had slammed shut from the inside. The animal was so drunk from the drinking of such quantities of blood that the farmer, together with two neighbors whom he had called in for help, was able to beat it to death with clubs and axes.

Whenever a snow leopard committed its outrages in a region, 136
as often happened in winter, it became advisable to avoid this region altogether for a while and rather to look for a new pasturing area. Bears and leopards, which did not inhabit his homeland, Namgyal did not become acquainted with until later during his travels to Kashmir and Lahul, where he had ample experience with them. He had a sharp eye for the doings of all animals and he observed them closely. More than once wild sheep had approached his goats and sheep while pasturing at the mountain without particularly taking notice of him. These wild sheep were fine animals almost the size of stags, of the brown color of deer, the old rams had horns which in their winding measured about 70 centimeters. Ibexes also approached sometimes with greater caution. Numerous flocks of rock-partridges enlivened the otherwise so barren mountain slopes, especially in the vicinity of the cultivated village oases; and from the cliffs up there near the snow field there frequently resounded the long drawn-out whistle of the snow pheasant (slope hen /rock-partridge?/). Great swarms of blue mountain doves nested in the precipitous walls, with their many caves, over there beyond the Indus, and in the /38/ air the mighty imperial eagles and the lammergeiers circled around. There was a colorful variety of small feathered inhabitants of these heights, from the wall-creeper, which climbs along rock faces like a woodpecker on a tree, and the wheat ear, which hops along between the boulders of the slope amid continual bobbing and gay twittering, to the many-colored, white-capped redstarts in the bottom of the valley and the sand martin in its simple blackish dress which dives after larvae down at the roaring brook. All these animals, and many more which inhabit the waste 775
heights and highland plateaus attracted Namgyal's attention with their activities, aroused his thirst for knowledge, and stimulated his imagination; all the more so since a lama had recently taught him that all forms of life, even the lowest, are beings that are in the cycle of the transmigration of souls and are striving for their final release but must always be embodied again in many different forms as a punishment for their sins. Since then Namgyal observed attentively the herd animals of the village and frequently asked himself which of the animals might lodge the souls of his grandfather and of his deceased aunt; but he did not dare ask anyone about it. The lama had made indications to that effect.

Did Namgyal also have an eye for the wonderful sublimity of 000
the mountain scenery of his homeland? A Tibetan hardly ever expresses

himself on this point. And what a picture there lay before his view spread out on these heights, a picture of tremendous, wild beauty! Over valleys, gorges and crevices, wildly jagged mountain chains and ridges, the vista sweeps along to the distant mountain faces yonder in the west, which shine in all colors from bright red to violet in the clear, glaring sunshine of these heights with their thin, dry air. Over there to the right there is a very extensive snow field whose melting water the brook carries down into the valley. To the left there are two mountain peaks crowned with glaciers. Over it all there is the arch of the deep blue, cloudless sky. A wonderful silence prevails in this wild mountain world into which Namgyal drove his herd, a silence which is only now and then interrupted by the bleating of a goat, the scream of the chough among the cliffs, the howling of a wolf yonder by the slope of the mountain.

/39/ No person can escape the stupendous impression of the majesty of this world of mountains; here live and rule supernatural powers; here divinity approaches directly the feeble man who penetrates into this empire; it lives in the towering cliff, in the glacier which on the heights embraces the tremendous mountain caps in its clutch, in the plant which grows forth from the cracks in the rock; the deity speaks from the brook which cleaves its roaring way through the rocky wall; it speaks from the tempestuous south wind which sweeps howling into the valley from the high mountains, as well as from the avalanche of rocks which looses itself from the precipice and roars thundering into the depths below.

Namgyal's receptive spirit could not possibly avoid these impressions. He was a plucky boy, a courageous climber and rider. Because of his courage in the brawls with his companions the latter had given him the nickname "Jigsmed" (Without-fear).

During the day the boy wandered through the mountains and the valleys without apprehension in spite of the wolves who are present everywhere, whenever it was necessary to look for a lost sheep. But when dusk settled down on the series of chasms and dark shadows spread out over mountain and slopes, our "Without-fear" was overcome by a secret terror. Then the jagged rocks and peaks turned into a thousand shapes which stretched their arms threateningly at him, and at this time voices became loud which had been silent during the day. From the plateau yonder he could hear the howling of the wolves, in the ravine there to the left a fox was barking, over there from the old ruin of the Darden castle there resounded the call of the screech owl, and sounds

12: Douglas T-3 (1951)1953 AJ4 W. Tibetans AJ4

The north bank of the Chandra, which the trail follows, is part 133
of a huge finger of land, a sort of peninsula many miles long and eighteen thousand feet or so high. The Chandra flows on one side of this peninsula, the Bhaga on the other. The Chandra and Bhaga rise on Baralacha Pass (which we later crossed), flow in opposite directions at the start, then parallel each other, and finally join about six miles west of Gundala. A historic short cut is from Koksar over the peninsula to the foot of Baralacha—a wild, broken stretch of mountains that claimed the life of Hilda Richmond in 1939. We took the long way, swinging around this long finger of land.

Opposite us was a mighty range capped by Snowy Peak or Gundala Peak, whose exploration is described in Bruce, *Kulu and Lahoul*. One looks almost straight up from the river ten thousand feet. There are cliffs that are sheer for several thousand feet. Glaciers run to their edges, tremendous ice fields impregnated with dust and dirt so that when the afternoon sun strikes them they turn to gold. Some of these glaciers not only grip the shoulder of the high cliffs but also droop down their sides like gargantuan icicles. Waterfalls drop from the cold lips of these glaciers; deep in one recess of these gargantuan rocks I saw three, each a thin, miniature Niagara but several times higher. They were falling unknown hundreds of feet in white, soundless spray, ending in milky streams that ran in torrents to the Chandra. The rocks sprayed by these falls were painted with moss and lichens. In the lower reaches some of the moisture from the ice fields watered high ledges and benches that were covered with a short green nap as smooth and as soft to the eye as velvet. The highest points, the topmost ledges, were filled with snow. The blizzard that we had traveled en route to Koti had left the high granite shafts that top the ridge freshly powdered.

Many tributaries feed the Chandra on its run to the confluence [134] •
with the Bhaga. In the summer they are filled with a small snow trout, which I did not see but of which the natives boast. This day

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777 was plain that the clouds were lifting and that the storm was breaking up.

By the time the mule train was packed, we were in streaming sunshine and Toche Phirche was beginning to lose some of its sogginess through steam. There were black, ominous clouds on a high ridge to the north, the direction we were headed. Budh Ram pointed to them, misgivings written in his face. I grinned, pointed to my hat, and then to the clouds.

133 I was a good prophet. We climbed a thousand feet or so as we
137 left Toche Phirche and soon came into a vast basin (called Kiangcha), mostly flat, fifteen or twenty miles wide, and stretching ahead and behind as far as the eye could see. This basin was covered with scattered patches of the *dama* (*Caragana versicolor*), a low bush clinging to the ground like heather. It is used as fuel in this region and has the interesting feature of burning even though green. A moss called *burtse* (Eurotia) also grew here, a moss I had seen ever since we left Chakchu. It grew in clumps as big as a saucepan and was dried by the natives for use
• [196] as fuel. We traveled the basin for several hours. There were ibex above us on the canyon walls to the west, feeding off and on, then stopping to watch us, but always keeping a thousand yards or more distant. The storm that had been making up to the north swung east and then south, leaving us in brilliant sunshine all the way.

777 I stopped to put some flowers in my plant press and before mounting my mule made the announcement that I was tired of wearing my glass helmet. "Does anyone want to wear it?" I asked.

Rahul spoke up, so I gave it to him. We moved on—Rahul, the glittering white helmet, and the dappled gray mule in the rear. In an hour we had climbed a slight rise in the broad basin and faced Pagmur Pass to the north and a host of granite peaks and ice fields to the northwest. A storm that was brewing among the peaks soon moved toward us. It came faster than a horse

12: Douglas T-3 (1951)1953 AJ4 W. Tibetans AJ4

could run, sending out in front rough couriers of cold wind and sleeting rain. These couriers seemed to be on a hunt, for they chased before them a herd of wild asses. They were beautiful animals about the size of Missouri mules, with long tails, light tan bodies, dark brown splotches on their backs and heads.

They are animals that are very hard to domesticate. A young one touched by man seems to have the mark of pestilence on it, for it will never be reclaimed by its mother. Its meat[1] is said to be very palatable; the Moslems of Ladakh have indeed a great fondness for it. Rup Singh up front rode to within thirty yards of the herd that had just come over Pagmur before they broke and ran. Before I could get my movie camera and telescopic lens into play, black clouds rolled over Pagmur like a wave and washed down on us. Photographing the wild asses was impossible. We leaned forward in our saddles, hugging the mules for warmth.

I shouted to Rahul, "The hat has lost its magic."

"With *me* it has," he laughingly replied. "*You* must wear it after this."

That night the word went through our camp (just below the north side of Pagmur) that Rahul did not have the magic, only Sahib. It poured that night, raining so hard we had to dig trenches around our pup tents for drainage. The morning was soggy; visibility was cut to a few hundred yards; the air was heavy with mist and the duffel bags heavy with moisture. I thought Budh Ram handed me the hat with extraordinary eagerness this morning, an eagerness that nevertheless was mixed with some doubt. There seemed to be working in his head a conflict between his desire to get rid of the rain and his fear of stretching the magic of the hat beyond the point where it could be effective. Certainly it seemed dubious if any power could protect us from the weight of the clouds that hung low over Pagmur. Today may be the end of my act with the hat, I said to myself. In a little while everyone will know this hoax for what it is.

The magic, however, held. A south wind streaked down from

[1] [I.E. WILD ASSES -- ANALYST]

12: Douglas T-3 (1951)1953 AJ4 W. Tibetans AJ4

000 train. There was one other exception, when we traveled from Pagmur to Leh with Nehru's horsemen.

133 About eight miles below Pagmur at a place called Zara we got
361 horses and yaks. Zara is a barren, rolling basin that lies at the confluence of three bleak valleys. There is no mark of habitation at Zara except a few tents. Zara is indeed only a rendezvous for the goatherds of Rupshu—a region as remote from civilization and even from caravans as any place in Central Asia, an area inhabited by migrating tribes who have and enforce their own law quite independently of the central government at Leh.

• 136 Rupshu has large, fat marmots (called wild dogs by the natives), who peer curiously at all travelers. They pop in and out of their holes, running awkwardly. Then they stand and whistle in
[825] a tantalizing manner. The natives believe the marmot has the soul
[751] of a man who is mischievous and malicious. The fat* is used externally for rheumatism.

Rupshu also has some geese and ducks, the burrhl or blue sheep, the big-horned *Ovis ammon*, a snow cock, and gazelles. Big brown wolves raid the flocks of the miserably poor people, called Rupshupa or Changpa, who roam its almost barren basins and ridges.

137 This area has bunch grass, the mossy *burtse*, the low *dama* bush,
735 and a small sage-colored bush that the Tibetans call *jyapshen*.
511 But one takes a long step between clumps of grass. The mark of overgrazing lies heavily on Rupshu. The mark of poverty is on the people and their possessions, as well as on the land. Their
[291] brown pup-like tents are often in tatters. The Rupshupa go barefoot, wrapped in heavy brown coats that reach to their ankles. The black hair of men and women alike hangs in a tangled mass down their foreheads and necks. Their skin has ground in it the dust of hundreds of storms, and they carry the look of people who have not bathed for months on end.

000 We met the Rupshupa at Zara on a small piece of green meadow by a clear-water brook that comes down from the east.

*[Of the marmot--Analyst]

to the Tsarap River. Great jagged peaks dominated the skyline to the south and west. Tremendous chasms that grew in depth with lengthening shadows twisted and turned for miles on end where drainage of thousands of years had cut through rocks and sediment.

Not far below us a clear, cold stream dropped off a cliff and spattered the trail with a soft spray. It was the reason why Chakchu was a popular camp site. There was indeed no other good water for miles and miles. Chakchu was much used, carrying the black scars of many campfires.

We made camp early and then sat on our perch watching every movement of life in the vast canyons below us and on the high peaks above. A horned lark visited us—a bold bird, gray underneath and white on top, with two pointed tufts of black feathers above the eyes. Two huge, coal-black Tibetan ravens and an eagle with an eight-foot spread caught currents of air as they swooped below us and sailed gracefully into the void, looking with sharp, cold eyes for carrion. A finch with a black head hopped along the ridge, flying short distances, and feeding as he went.

There was no noise, no wind, not even a humming of the *dama* bush that colored the slopes with dark green splotches. There was solitude so deep one could almost hear his thoughts. This was a place so far removed from all my people and my problems, it seemed I was in another world. It seemed I sat in the heavens apart from the earth. It seemed that Chakchu was the place where man could best come to know his relations with his God, his relations with the diverse forces and powers within himself that produce discord where harmony is needed.

I sat for perhaps an hour lost in these thoughts, when my eye caught a movement along the trail below me. The trail cut a thin white line in the side of the mountain for a mile or so until it disappeared around a gargantuan shoulder of rock thrust out into the canyon. The figure was a man with a pack on his back. In ten

12: Douglas T-3 (1951)1953 AJ4 W. Tibetans AJ4

CHAPTER 15

HEMIS MONASTERY

After crossing Staglang La Pass we dropped about two thousand feet almost straight down a mountain wall and followed a narrow, winding canyon to Gya, the first village we had seen since we left Jispa seven days earlier. Gya, with a dozen or more flat-roofed stone houses, was plain and ugly though it sat in a waving sea of lush barley fields. Below Gya the canyon widens out until in twelve miles it opens into the Indus Valley. We followed a small clear-water stream, ideal for trout, all the way down. The canyon was bleak and bare, more sterile-looking than anything Arizona can offer. There were partridge or chukar in the canyon—buff-colored like those in Persia and a bit smaller than our grouse. The walls and slopes of the canyon were being combed by goats herded by barefoot girls dressed in rags. These girls had long slingshots made of string and leather which they whirled, throwing rocks at the goats to turn the herd and shift its direction.

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. Tibetans AJ4

137 hardly credit any green growth at all, yet even here all sorts of little herbs and flowering thistles grow, each showing marked adaptation to its very dry habitat. Most important of these is the pungent-smelling, low-growing, bushy herb called *Burtsa*, which in the wildest places, far from habitation and cultivation, serves as fuel for man and food for beast.

Even now we have forgotten one of the most typical and best-known flowers in Ladak, the little stunted blue and white iris that springs up all along the water courses, and is the first flower to gladden our winter-weary eyes. Like most species up here, of plants and animals and even men, it exhibits the dwarfed mountain habit, and would look insignificant beside its handsome counterpart in Kashmir.

136 As regards the fauna of the country, we can better describe it under transport and shikar, for under those two headings we meet with nearly all the species which occur, but we might here add a few words about the birds of the country.

In the summer of 1923, Mr. B. B. Osmaston, a keen ornithologist visited Ladak, and made a list of sixty-seven different species of birds that he found in this country. Let it be noted that for many of these, the Ladaki has his own Tibetan name, showing that he is not only an observer, but a lover of nature. We have our residents, and our summer and winter visitors. That the latter should find even Leh too warm in the summer is surprising. Let us begin with our residents. Of the crows and ravens, our friendly scavengers, to whom should be added the noisy magpies with their constant "cha, cha, cha, cha, cha, cha," we have already spoken, but we must not forget the chough with its red or yellow bill, who in the early spring builds his nest in the sandy cliff near Leh, while pigeons (Rock and Blue Hill) abound. Smaller birds on the whole, find the rigours of winter too severe, and many of them leave us, their places being taken by others, who descend from the higher regions. The sparrow we have always with us, and he is kept company by

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. Tibetans AJ4

the little Grey Tit in his beautiful grey coat and black waistcoat and cap. We are not sure about the Dipper in his evening dress suit, nor the Crag Martin, but believe that both manage to hold out through the coldest months. The hardy Mountain Finches (Adams' and Brandt's), however, do not even come down from the neighbouring heights, where they manage somehow to find food all the winter, although quite a number of birds from the higher uplands visit us during the cold months. The Eagle and the Vulture, finding too much snow on the mountains, come down to obtain their food, leaving us in the Spring to make room for Hawk, Kite and Kestrel. The little Robin Accentor, with his dull red breast, also finds the mountains, his summer residence, too cold. When the down-country Rosefinch, the Common Redstart and the Field and Desert Larks leave us in the autumn, their half-brothers, Seventzov's Rose Finch, Guldenstadt's Redstart and Elwes' Horned Larks come to represent their families. Most of our Desert Chats leave us in spring, only a few staying behind to build a nest here and there in the deserts round Leh. The winter also provides excellent shooting for the sportsman. Besides the ducks, Mallard, Tufted Pochard, Ruddy Shelldrake, and Common Teal (to mention only a few), and Snipe, which can be found in all the swampy little rivulets, the mountains and hills will provide Chikor (the partridge so common in India) for his gun and his pot, whilst nearer Tibet, the Tibetan Sandgrouse can be obtained. If he wants pheasants, these, too, are represented up on the snows by the Tibetan or Himalayan Snow Cock, who draw immediate attention to themselves by their peculiar and shrill whistle which so rapidly ascends the scale. How sorry we are to lose the company of these in the spring, for not only does this spell the end of happy days in their company with a gun, but a return to the everlasting mutton, living as we do in a State over which a Hindu Maharajah rules. This too, however, has its compensation for now our summer

13: Heber and Heber D-8 (1914-25) 1926 AJ4 W. Tibetans AJ4

136 migrants appear. First of all the Wagtails come (Hodgson's pied ; grey and yellow-headed), making the streams and rivulets bright with their graceful movements and undulating flight, soon to be followed by the Siberian Chiffchaff, with his monotonous " cheep, cheep, cheep, cheep," The common Redstart, too, is here now, whilst the Hoopoo calls his " Ooppooppoopp " (the Ladaki name for him) to the farmer, giving him permission to sow his fields, unafraid of serious harm to his crops from further cold. The Cuckoo, too, makes his song heard occasionally about this time, and now one can notice the Western Blue Rock Thrush, whose coat really does look a beautiful slaty blue as he sits in the sun. Above the river, Gulls and Tern wheel and sweep, and are kept company by Swift and Martin ; on the stones by its side, the Ibisbill finds his food, whilst the royal Heron meditates solemnly by the water's edge with his neck well tucked in. So we can boast of a varied ornithology, full of interest and change.

132 We have already made so many references to climate and altitude that the reader will have gathered a fair idea of both. The extremes of the climate may be summed up in the oft-told saying that if you sit in the shade of a rock, the part of your body within the shadow freezes, while that in the sunshine boils ! The heat of summer out in the desert is intense, for the long stretches of sand and the barren glaring rocks seem both to soak up sunshine and reflect it back as it pours out of a sky which is so often cloudless. Yet in the shade of rocks and trees and in the ordinary life in and about a house, it is never oppressive, and there are few summer
241 evenings in Leh when an extra wrap is not needed. The
132 short summer from June to mid-September sees the ripening of the wheat, barley and lucerne crops, the coarse grained barley being the more important source of food, and growing up to altitudes of over 14,000 feet. In the lower warmer
312 villages the summer is longer, and a second crop may be
241 raised. All this cultivation is entirely kept alive by irrigation,

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. Tibetans AJ4

574 Asked how he was enjoying it, he replied that if he smoked much more he would become intoxicated.

000 Having refreshed ourselves with tea, and the rain having ceased, we go to look for a good camping spot, and fix on a field already harvested. Soon our luggage arrives, and the ponymen tell us that for four miles they had to unload their ponies and carry the loads themselves. Fancy carrying a heavy tent over a bad road for four miles! Two of the ponies had fallen down the steep hillside with their loads tightly bound on their backs; but, fortunately for them, these were bedding and tents, so they did not hurt themselves seriously, and, fortunately for us, they just stopped short of the water, so we had dry beds that night. This part of the road has been described somewhat in detail, and, although all is perfectly true, yet it is not so bad in the actual going as it sounds, for one is much too occupied with the next step to worry about potential accidents, and it is only in prospect or retrospect that the perils of the road appal.

Early next morning we are off again, and soon come to the [136] inevitable pass. Here the many marmots provide interest by announcing the coming of a stranger with a shrill policeman-like whistle, as they sit at the doors of their burrows. They are remarkably tame, for the Doctor stalked one and actually touched him with his stick as he disappeared down his hole, only to reappear a few minutes later. He was then about to reach his hand out to stroke him, but was warned by his Ladaki *zhabzhi* (foot-helper) that they bite hard. When travelling in another direction some weeks before this, my companion's dog noticed a marmot running hard for his hole. "Bunty" managed to head him off and bowl him over, biting him hard in the abdomen, but nowhere else, for friend marmot was a sportsman. He sat up on his hind legs held up his fists in the approved boxer fashion, and kept "Bunty" at bay. We were able to walk right up to the combatants, when, seeing the marmot was badly

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. Tibetans AJ4

the service than a continuous whirl of social functions in some Indian hill-station. One thinks wistfully of two "subs." who had saved up for such a holiday, one of them being the son of a man who had shot up here years ago, when he himself was in the Indian Army. But, alas, having reached Leh, they found they had only sufficient money to get back to their station, and had to give up the idea of shooting. Of wild sheep we have several kinds, most of them having splendid horns. It is said that these are so heavy that eventually their owners die of starvation, as they get too feeble to carry them and go in search of food.

To begin with, we have the Sharpu, which live on the lower hills and during the winter come right down into the fields. Out shooting one day, my shikari, a Ladaki hunter, and I spotted five of these animals on a hill opposite to us, and soon after noticed a couple of wolves stalking them. I got within five yards of the latter, as they lay waiting behind a rock. By the time I had jumped off my pony and had loaded my gun, they had got quite out of range, although they seemed to be slinking away quite slowly. We then watched the Sharpu, and to our surprise they came clean across the valley to the very spot where the wolves had been waiting for them, and passed within ten yards of us, even stopping to look at us. Needless to say they were does, and ladies one does not shoot. Large numbers of these must be killed by other predatory animals. Another time we found a Sharpu with horns of thirty inches, which had only just been brought down by a snow-leopard. At last I hoped to get one of the latter, which are fairly plentiful, though as yet I had never met one. But, alas, he got wind, and evaded me. The Ladakis hate these snow-leopards for they do much harm to their flocks. In order to catch them, they dig deep holes in the ground and build overhanging walls round. They then put down the sheep, whose bleating attracts the leopard. Having jumped in, he cannot negotiate the overhanging wall and meets an

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. Tibetans AJ4

224 ignoble death from stoning. The Ladakis assert that once down he is so scared that he does not attempt to kill the sheep, but this may be no truer than the statement that they hate them so much that they skin them alive. The people also make a very useful wolf-trap. One end of a large rock is balanced on a stick, to which they tie a piece of meat. A pull
● 136 on this brings the stone down on the animal's head. On the higher hills the burrhel can be found grazing sometimes in herds of fifty to a hundred. These seem to have as many lives as a cat, for on two occasions I have hit them, brought them rolling down the hill, but on approaching to gloat over my kill, they have calmly got up and walked off. After this, I learnt not to unload until my foot rested on the dead body of my victim. Much higher up one finds the Ovis Ammon, a magnificent animal, whose horns at the base measure about eighteen inches in girth, and whose length is about fifty inches when full-grown. The Ibex, a kind of goat, prefers the rockier regions and, although the Ladaki Ibex is not as fine as that from Baltistan, yet even he can boast of horns some forty inches long. Right on the uplands towards Tibet, one can also get antelope, with beautifully slender, graceful horns, which at their ends curl forwards, not backwards. At one time it was possible to shoot the wild yak, but, even were he not almost extinct now, it would not be permissible to shoot him in
224 the state of a Hindu Maharajah. It is surprising how these various animals keep to their own grazing grounds, and the native hunter, who is the gillie of Ladak, knows exactly on which slopes the various animals may be found. These gillies are remarkable for the way in which they can tell you the length of a horn to an inch or two, even at two hundred to three hundred yards. This is an essential qualification, for one is not allowed to shoot an animal unless his horns have reached
136 a certain length. During the winter small game abounds almost everywhere. On the rocks pigeons are plentiful, and twice I have killed thirteen pigeons—a lucky number this time—

13: Heber and Heber D-3 (1914-25) 1926 AJ4 W. ..betans AJ4

with my two barrels. On the sandy hill-sides one hears the clucking of partridges, and the creeks of the Indus abound with ducks. Among the snows are the snow cocks, and in the desert the hares. One day I had just raised my gun to shoot one of these, when, before I could pull the trigger, an eagle swooped down, caught him in his talons and soared away. It was a wonderful sight to watch him fly majestically with his prey right across the valley to his eyrie high up the mountain on the other side. His impudence had so nonplussed me that I had not pulled the trigger.

Thus the varied interest of the wild life in the mountains is never exhausted, and the remembrance of these happy days spent so close up to nature will always recall an experience which must closely approach " the top of the fulness of life."

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir
W. Tibetans AJ4

133* on a large evaporating area being formed the water may begin in some degree to get saline even before the outflow has ceased; wherever there is less outflow than inflow there must be concentration of salts, and there will be less outflow than inflow for any lake of large area even if it have an outlet.

A few facts must be given about the lacustrine deposits that have been formed and are now forming. At the south end of the lake there is a flat plain about 20 feet above the water level; this lies between the shore of the lake and the Phirsa fan, extending for about two miles; the surface is clayey, and sections show interstratifications of finely laminated brown clay and very fine sand; the laminæ are sometimes curved about on a small scale, making as it were pot-holes in the clay filled with sand. This is clearly a lacustrine deposit: it was made when the lake was about at its highest. There are traces of the same deposit along the eastern bank of the lake, for a mile and a half or so north of the north-east corner of it. To a great extent the material must have been supplied by the branching streams of the Phirsa River; but some of it may have been derived from the waste of the lake-side rocks by wave-action. This supply of material to form lacustrine beds *close to the outlet*, brought down by the stream that formed the fan that makes the dam, is a circumstance that I have never seen noticed in any account of a lake, but it is one that must often have occurred. Where the Karzok stream comes down is a very similar deposit. A flat 15 feet above the water extends out for half a mile from the hills; it is composed of beds of clay and sand, some of the latter very fine, and on the surface a fine shingle is strewn; this was the subaqueous delta of the Karzok stream, formed when the lake was higher than now; it ends off in a low cliff to the lake. At the north end of the lake, where another stream comes in, is a flat partly of shingle partly of sand; the sand from it has been blown up into small hillocks.

133* 136 The *island* is about half a mile from the shore, near midway in the length of the western side; it may be 100 yards from corner to corner in one direction and 60 yards in another; it is of gneiss rock, rising only nine or ten feet above the water; the soundings

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir
W. Tibetans A14

before given show that there is about 100 feet of water between the island and the near shore. This little place, being ordinarily undisturbed by man, is a great resort of the gull, which in Ladākhī is called *Chagharatse*; the surface was nearly all covered with its droppings, and there were hundreds of the young about; most of these must have been hatched near the beginning of July. Having heard that it was a matter of interest with some ornithologists to learn about the nidification of the wild goose,* I was on the look out for information concerning it, and I found that this island is one of the places where it lays its eggs. I was told by the Chāmpās that they find the eggs there just before the ice breaks up—say the beginning of May, after that they have no means of reaching the island; I myself found there a broken egg, but at the time I was on the island (the last week in July) the young had all been hatched. A few days later I followed the same inquiry in the valley of the Salt Lake, and on an earthy island in the fresh-water lake called Panbuk I found a nest where the mother was sitting with some goslings and two eggs, one just breaking with the chick; the other egg I measured and found to be 3¼ inches by 2¼, and very nearly elliptical in form. The nest was a slight hollow, lined with, first, a few bits of a soft herb, then with feathers; I was told that these goose eggs are found also at the edge of the Salt Lake itself.

For man and his followings the banks of Tsomorīrī are inhospitable. The bare rocky or earthy mountains and the stony plains afford little pasture for the flocks. Still the traveller finds patches of grazing ground just near enough for one to go from one to another in a day's march. Karzok, which is the headquarters of Rupshu, is situated near the shore of the lake. Here is a house and a monastery. The house belongs to the chief man of the district and of the tribe. The monastery is for about thirty-five Lāmās; the building of this under the difficult circumstances of the place, whither every bit of wood had to be carried from far, and the keeping up of it, is creditable to the Rupshu people. There are, besides, eight or ten small houses—mere hovels—where some old and sick remain when the camp has gone to the Indus Valley.

* The barred-goose; in Ladākhī, *sangpā*.

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir
W. Tibetans A14

is continued more to the east than before, while in the line of its original direction are some more hills which are joined to the other ridge by a neck called on the Survey Map "Chang Pass"; this Pass is practically the boundary of Chinese Tibet in that direction; in the Indus Valley the boundary will be a day or two's march beyond Dora.

It is natural that the more favourable circumstances of this part of the Indus Valley should encourage animal life to a greater extent than is common in Rupshu. I saw here some small herds of the Tibetan antelope, and the Tibetan hare is common here as well as lower down towards Nimū and again towards Chushal; it is a large hare, with much white, the back of a brownish grey. But the animal one sees most of in these parts is the Kyang or wild ass—wild horse it has sometimes been called—an animal which is met with singly or in twos and threes in many parts of Rupshu (as, for instance, the Salt Lake plain) but here is in far greater number than anywhere else. In a day's march I saw some 300 kyang, as many as 100 at one view. There were several different herds; they all let us come to about 250 yards from them and then trotted off, or if frightened by noise galloped away, often leaving the low ground and taking to the stony slopes. This animal is decidedly nearer the ass than the horse, but in outward appearance is much more like a mule than either. He is like a good mule such as one gets in the upper part of the Punjāb, about Rāwal Pindī.* The colour is brown, but white under the belly; there is a dark stripe down the back, but no cross on the shoulder. Of a full-grown male, a fine handsome animal, that I shot in order to make closer observations, the following are some measurements:

Height	54 inches (13 hands 2 in.)
Length of head (from point of muzzle to root of ear)	21½ "
Length of ear	9½ "
Fore hoof, length	5 "
" width	4 "
Hind hoof, length	4⅞ "
" width	3¾ "

* Trebeck, Moorcroft's companion, wrote that the kyang is neither horse nor ass, that his shape is as much like one as the other.

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir
W. Tibetans AV4

On getting as near as we could to one of the herds and dispersing it, we separated and at last with some difficulty caught a colt of fifteen days or a little more. He was 35 inches high, his head was 13 inches long, his ear 6 inches; his coat was thick but soft, the mane short and curly, the tail short and bushy. His voice, as well as the voice of full-grown ones that we got pretty near to, was almost exactly like that of a mule—a subdued grunt or abortive bray. This little fellow soon lost his shyness and would let anyone come near him without fear; we tried hard to rear him, but he died in two or three days. Several attempts have been made to tame the kyang, but little success has attended them. I have eaten the flesh of kyang in the form of steak, and found it very like beefsteak, but rather coarser; the Chāmpās are glad to eat it when they get a chance.

PĀNGKONG LAKE.

In entering another of the high-level valleys of Ladākh we leave the area draining directly into the Indus, and come to where the drainage either communicates or has communicated with the river Shāyok. We saw that the neck of the Tsāka Pass is a point on the watershed between the two basins. From its summit there is an easy descent into a very gradually sloping valley, which, in less than 30 miles, leads us past the village of Chushal to the shores of the Pāngkong Lake.

The series of lakes in one and the same line of valley, but just separated from each other, the lowest of which bears the name of Pāngkong or Pāngong, occupy a length of valley of 90 miles, or it may be more; the eastern end is unexplored, but the people about speak of its being an eight days' journey from end to end of the lakes. The upper part of Pāngkong itself and the lake next above are known to us only through the explorations (made in 1863) of Major H. H. Godwin-Austen, of the G. T. Survey, whose journal gives an admirable account of it,* and whose topographical work on the Survey Map is a most valuable guide to anyone who may

* Journal Asiatic Society of Bengal, vol. xxxvii., part ii.

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir
W. Tibetans A14

133X themselves, by their currents and their shore-action, had accumulated deposits along the line of the Lokzhung Mountains, which, on their retreating, became bars separating the two watery tracts, and have since become the watershed between the two enclosed drainage-areas.

136 There is another subject—the extent to which this region can
137 support animal or vegetable life—about which the little I have to say may be worth telling, since the place is so seldom visited. In the description hitherto little has been spoken of but earth and stones and rocks; but in this I have been guilty of hardly any omission, so few are the traces of either animal or vegetable life. Vegetation exists but here and there; generally every 10 or 15 miles is to be found some *burtse*, or Eurotia, the plant that serves for fuel, though at one halting-place moss is obtained in its stead, and at another neither *burtse* nor moss can be got. Pasture is still rarer; on leaving the last halting-place in the Chonglung branch of the Chāngchenmo Valley we had to pass over 60 or 70 miles before reaching any grass; the first find was at Lokzhung, a halting-place in the middle of the mountains of the same name. On the Kuenlun Plains grass is equally scarce, and it is only when one gets well into the Eastern Kārakāsh Valley that this cause of difficulty in keeping one's baggage animals alive dis-
136 appears. Of wild animals one would think from the foot-prints that great numbers must live in the plains and the surrounding mountains; but one sees few, and on reflection it appears that the many foot-prints are the work of a comparatively small number of individuals, for in this country a mark made may stay unobliterated for years. I saw Kyang, the Wild Ass, but only singly, at Thaldat, which is a watering-place of his; a track had been made straight to it for two miles, beaten and cleared of stones by continual passage. Hare also are now and then to be seen, and foot-prints of Antelope were observed at various places on the plains. Beyond, on the Eastern Kārakāsh, Kyang, and Antelope, and Hare were more plentiful. A beast I had not before seen, was the wild yāk; him I met among the Lokzhung

1: Drew G-3 (1862-1872) 1875 AV1 Kashmir

Mountains—a solitary bull—an animal in form exactly like the domesticated yāk, but of larger bulk; from his sides hung long hair, but his back was comparatively bare. At first, on seeing us, he went away with a short quick trot, but he afterwards broke into a heavy lumbering gallop. It has been doubted whether the domestic yāk comes from this wild one, or whether the wild yāk may not have sprung from some that have escaped from the camps of travellers, for every now and then these beasts of burden are overcome, and, unable to carry their loads, are relinquished; these may, perhaps, recover, and, finding subsistence on some scant pasture, live and reproduce their kind in a wild state.

There is one other phenomenon that deserves a moment's attention before we leave this interesting ground. There are at least two instances of *ice-beds*, or, as some have called them, *snow-beds*, occurring in the plains. I prefer the former name as being more truly descriptive, although at first sight they look just like beds of snow. Colonel H. Strachey described two or three of these in Rupshu and Pāngkong, but gave no explanation of their origin. Mr. Johnson mentioned the one at Thaldat, which was the first I ever saw. On the plain, a mile or two from the nearest hill, a space about a mile long and a quarter of a mile wide is occupied by the ice-bed; it lies in the bed of a stream, with the water flowing beneath part of it; the greatest thickness that I saw was four feet; some of it was like *nevé*, and some was more icy. A similar bed which I saw in Rupshu (one of those noticed by Colonel Strachey), I find described in my notes as being made in great part of layers from a quarter inch to one and a half inch thick of prismatic ice, the prismatic crystals being of course at right angles to the surface of the layers; there, too, was some that is described as like *nevé*. At other parts, again, the length of the prisms (and therefore the thickness of one layer of ice) was as much as eight inches.

I think that these ice-beds are the unmelted ice of the streams, formed especially in spring, when the successive rising levels of the water that flowed from the melting snows would make layer after layer of ice, as the still severe cold at that time

2: Gervis T-3 (no date) 1954 AV1 Kashmir [illegible]
W. Tibetans AJ 4

497 morning so that we reached the summit with the dawn. There
133 the wind was bitterly cold; we followed the lower track, for the road along the face of the cliff was impossible.

The Tibetan name for the pass is Zoji La; this was the first time that we discovered that most of the places from there on had two names, a Kashmiri one and a Tibetan one. Unfortunately the map seemed to have mixed them up, probably using the best known, but we did not always strike men of the country who recognised them.

[485] Once over the pass the country changes completely; there is already a Tibetan atmosphere in the air. Going down the other side there are numerous little dak huts built by the roadside for the use of those who chance the journey too late and get caught by the weather.

361 We came upon what we at first imagined would be the start of
● 136 a village, but found it to consist of a house or two, a telegraph post and a rest house. At many places tracks led off, some to lone, distant "farms", some to parts which were known to be good for shikar, for game is plentiful for the sportsman in parts of Ladakh. It is the home of the ibex and the markhor; both are of the wild goat family; there are wild sheep and kiang—sandy red, wild asses with dark manes and standing about twelve hands high—which are impossible to break; then there are red bear, snow leopard and in parts wolves are to be found; antelope and gazelle are common as are the reddish-brown marmot.

491 Here and there places had been marked on the Srinagar-printed map as the spot where a bridge would be found over the river, but there was no sign of it, probably the floods of the last season had carried it away, and we had to ford the waters; then on closer examination of the map we noticed a mark at the spot we had selected and decided that the printer had forgotten to make up his letterpress to include it in the key, or perhaps we were credited with enough common sense to know.

485 The first night we reached a rest house, and were there only just in time, for a quarter of an hour later a large party of men from Leh arrived; a few remained to sleep under the verandahs
515 outside—the stench of bodies was overpowering. I have been assured that the men of Ladakh are bathed three times only in their lives, when they are born, when they marry and when they

2: Gervis T-3 (no date) 1954 AV1 Kashmir
W. Tibetans AJ4

itself; the castle fort surmounting them must have been almost impossible to get at other than by alpine ropes. 361

The day following, we had our highest pass to cross and the easiest of them all. This was Fotu La at a height of thirteen thousand, four hundred feet. I had gone on, for I had seen ibex ahead—these are goat-like animals with coats varying in colour from cream to chocolate. On the summit I waited for the rest of the party while I admired the magnificent view, and watched them climbing up, so very slowly. Not until then did I appreciate the height we had reached and how it affected one by slackening movements. [133] [136]

From there it was a downhill road two thousand feet to Lamayaru along a watercourse tight in between gloriously coloured cliffs of most unusual shape; later we came on a valley with a stony path lined by prayer walls and dozens of chortens, the village being at the far end with a most interesting monastery built on the low hills above it.

The road on is along the bed of a narrow ravine, so narrow, with overhanging cliffs in places and the swift stream close on the other side, that one is forced to cross and recross almost the whole way. At the far end there is a bridge guarded by an old Dorga fort. Lamayaru has towering above it the ancient castle of Bragnag, built by King Naglug and dating back to A.D. 1150. 491 172

The great Buddhist monastery here is an astonishing place. It seems to consist of an enormous conglomeration of buildings, some of which might be carved out of the hill. There are narrow passages, steep staircases and unprotected ramparts; in parts there are tiny cells, in others large chapels with high-up windows and low benches; little recesses are cut in the walls, presumably for books. In one of these chapels there is a great image of Chubrezig which must be ten or twelve feet high; its background is a large circular plaque almost as high. The image has eleven heads, one on each side of that which is facing, and the others piled on top of them: it has a thousand hands spread out tier upon tier around the plaque, one of the larger pairs being held in prayer, another pair holding a rosary in one hand and a jewel in the other. 346 778

And from the roof of practically every house which sits at the foot of the hill, rag prayer flags fly, sending prayers to heaven, 788

3: Imperial Gazetteer G-3 (1889-95) 1909 AV1 Kashmir AV1
W. Tibetans AJ4

Srīvara the lake is called Dala. The cultivation on the lake is peculiar and interesting.

Ladākh.—The most westerly province of the high mountainous land spoken of as Tibet is called Ladākh or Ladāg. It is now politically a division of the Kashmīr State, lying between the Himālayas and the Kuenlun mountains, and between Baltistān and Chinese Tibet. The Karakoram range forms the northern boundary as far east as the Karakoram pass. The country is known to educated Tibetans by other names—Mangyāl, Nearis, Māryul.

Ladākh is one of the most elevated regions of the earth, its sparse cultivation ranging from 9,000 to 14,000 feet. The scanty population is found in scattered and secluded valleys, where along the river banks and on alluvial plateaux crops are raised by irrigation. Central Ladākh, which lies in the Indus valley, is the most important division of the country. To the north is Nubra, consisting of the valley of the Nubra river and a portion of the valley of the Shyok. The great floods of the Indus, caused by the descent of glaciers across its stream and that of the Shyok, and the consequent damming back of the Nubra river have caused great destruction to riverain lands, once cultivated but now wastes of granitic sand. Here the fields are fenced to guard the crops from the ponies of traders on their way to Yārkand. The south is the Rupshu country with its great lakes. Rupshu Lake covers an area of 60 to 70 square miles. Tsomoriri is 15 miles in length, and lies at an elevation of 14,900 feet. The lakes are land-locked and brackish. East of Central Ladākh is the lake of Pangkong, and in its neighbourhood crops of beardless barley and peas are raised at an elevation of 14,000 feet. South-west is the country of Zāskār, with a very severe climate chilled by the lofty snow ranges. Physical aspects.

The flora of Ladākh is scanty, and timber and fuel are the most pressing wants of the people. The *burtse* (*Eurotia*) is a low-growing bush which gives a fair fuel, and in the high valleys the *dama*, a kind of furze, is burnt. On some hill-sides the pencil cedar (*padam*) occurs; and in occasional ravines the wild willow is found. Arboriculture used to be discountenanced under the Gialpos, on the ground that trees deprived the land of fertility. Botany.

On the plains up to 17,000 feet wild asses or *kiang* (*Equus hemionus*), antelope (*Pantholops hodgsoni*), wild yak (*Bos grunniens*), ibex (*Capra sibirica*), and several kinds of wild sheep (*Ovis hodgsoni*, *O. vignei*, and *O. nahura*) are found; and Fauna.

the higher hill slopes up to 19,000 feet contain hares and marmots, and the beautiful snow leopard (Felis uncia) and the lynx (F. lynx). Knight, in Where Three Empires meet, remarks:-- 136

'Not only man, but also all creatures under his domination --horses, sheep, goats, fowls--are diminutive here, whereas the wild animals on the high mountains are of gigantic size.'

Drew counted as many as 300 kiang in a day's march. In outward appearance the kiang is like a mule, brown in colour with white under the belly, a dark stripe down the back, but no cross on the shoulder. One kiang shot by Drew was 54 inches in height. The flesh is rather like beef. They are common on the Changchenmo, and are met with in many parts of Ladakh, where their curiosity often disconcerts sportsmen by alarming game worth shooting. A curious fact in the fauna of Ladakh is the absence of birds in the higher parts of the country. An occasional raven is the only bird to be seen.

Climate. The climate is very dry and healthy. Rainfall is extremely slight, but fine dry flaked snow is frequent, and sometimes the fall is heavy. There is a remarkable absence of thunder and lightning. The air is invigorating, and all travellers notice the extraordinary extremes of cold and heat. In Rupshu the thermometer falls as low as 9° in September. The minimum temperature of the month is 23.5°, and the mean temperature 43°. As Knight remarks:-- 132

'So thin and devoid of moisture is the atmosphere that the variations of temperature are extreme, and rocks exposed to the sun's rays may be too hot to lay the hand upon, at the same time that it is freezing in the shade. To be suffering from heat on one side of one's body, while painfully cold on the other, is no uncommon sensation here.'

History. The history of Ladakh, until its conquest by Raja Gulab Singh in the first half of the nineteenth century, is intimately connected with Tibet, with which country it still holds commercial and religious relations. Stories are told of invasions in the seventeenth century by the neighbouring Baltis, sometimes successful, sometimes repulsed. About the end of the seventeenth century the Ladakhis called in the aid of the governor of Kashmir to repel the Sokpos, a Mughal tribe. Help was promptly given, and the Sokpos were driven out of Ladakh, after which it paid tribute to Kashmir. Prior to annexation by the Dogras, the government of the country was a mild form of monarchy. The ruler was called Gialpo or king, but the real power rested with the minister or Kahlon. The only

K 175 [648]

WT 642 175 792

2: Biscoe M-3 (1890-ca. 1920) 1922 AV4 Kashmiri
W. Tibetans AJ4

A Trip to Ladakh

ponies swimming. What was to be done? The question was soon answered by the pony-men taking the loads off the ponies and carrying them across, then tying a rope round a pony's neck, the pony being forced into the river whilst the rope was held by the man who walked across the bridge, thus keeping the pony's head up-stream, so that the strain was lessened. In this way all our ponies came across safely, but the man on the bridge had some difficulty in keeping his feet as the strain on the rope was fairly severe, especially in mid-stream.

The village of Suru lies under Nun Kun, a fine pile of rock, the summit being 23,500 feet above sea-level. It is one of the peaks that we can see from near Srinagar, and looks like a white pyramid. From where we stood, looking up from the Suru river, it was just magnificent, its great glaciers shining in the sunlight.

Just outside the village is a lonely grave, that of Captain Christian, who died of typhoid whilst on a shooting expedition. We spoke to the head of the village about safeguarding the grave.

On our march from Suru we came across a great number of marmots, living in communities like rabbits. They are of a reddish brown colour and of the size of a small fox. They place sentinels around their village, who sit on the top of a rock to enable them to get a good view of their enemies, and whistle louder and louder as they see one approaching and then dart into their burrows. They are most fascinating animals. They seem to like the wild garlic that grows profusely in these regions.

We entered the Wardwan Valley by the Do Nullah Pass, and had to walk for seven miles on a glacier; it was exciting work jumping the crevasses. We were careful to take off some inches on this side and land with plenty